DEPARTMENT OF
ECOLOGY
State of Washington

TECHNICAL SUPPORT DOCUMENT FOR PREVENTION OF SIGNIFICANT DETERIORATION (PSD) PERMIT

PERMIT NO: PSD-02-01 Amendment 3 DRAFT

Hanford Waste Treatment Plant
Richland, Washington

Prepared by

Air Quality Program
Washington State Department of Ecology
Olympia, Washington

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1. EXECUTIVE SUMMARY

The Washington State Department of Ecology (Ecology) has determined that the applicant, the United States Department of Energy (Hanford), has satisfied all of the requirements of Prevention of Significant Deterioration (PSD). An air quality analysis was performed to demonstrate that the construction and operation of the Waste Treatment Plant (WTP) project would not cause or contribute to significant deterioration in any Class I area. Ecology finds that the project will have no significant adverse impact on air quality. The technical analysis performed by Ecology is presented below.

2. INTRODUCTION

2.1. The Permitting Process

The PSD requirements are established in Title 40, Code of Federal Regulations (CFR), Part 52.21. Federal rules require PSD review of all new or modified stationary sources that meet certain overall size and pollution rate criteria. The objective of the PSD program is to prevent serious adverse environmental impact from emissions into the atmosphere by a new or modified stationary source. The program limits degradation of air quality to that which is not considered "significant" as defined by the federal regulations listed above. To meet the goal of limiting degradation of air quality, the PSD rules require that an applicant utilize the most effective air pollution control equipment and procedures after considering environmental, economic, and energy factors. The program sets up a mechanism for evaluating and controlling air emissions from a proposed source to minimize the impacts on air quality, visibility, soils, and vegetation.

2.2. The Project

2.2.1. The Site

Hanford is a 560-square mile site in southeastern Washington State, situated north and west of the cities of Richland, Kennewick, and Pasco, an area commonly known as Tri-Cities. The Hanford site was acquired by the United States Government in 1943 and was originally part of the highly secret Manhattan Project to produce plutonium for the world's first nuclear weapons. In 1989 the mission of Hanford shifted from weapons production to waste cleanup. An agreement between the United States Environmental Protection Agency (EPA), Ecology, and Hanford (Tri-Party Agreement) was signed that outlined the process for the cleanup of the site. Today's proposed WTP project is part of the waste cleanup.

2.2.2. The Waste Treatment Plant

The WTP is actually a complex of facilities proposed for Hanford's 200-East Area. This project involves the installation of equipment to treat and vitrify low- and high-activity waste. The vitrification process uses electrical current to convert hazardous, radioactive, and mixed

hazardous and radioactive waste into a stable glass and crystalline product. By immobilizing the waste in to a glass form, it will no longer be a threat to further contaminating the environment. Low-activity waste (LAW) is waste that contains radioactivity but is not classified as high-level waste, transuranic waste, or spent nuclear fuel. High-level waste (HLW) is irradiated fuel and the liquid and sludge from reprocessing fuel to recover plutonium. This radioactive waste cannot be destroyed or rendered nonradioactive. In fact, it may remain dangerous for thousands of years. The best that scientists can achieve is to immobilize the waste in a process like vitrification and isolate it from human and environmental receptors so that the risk of exposure is minimized.

The original permit was issued on November 7, 2002. The elements of the project were:

- A pretreatment plant to prepare the LAW and HLW for vitrification. Basically, this pretreatment is just a process that concentrates the waste by removing water and solids.
- A LAW vitrification plant to convert the blended waste slurry into a solid glass product in a sealed metal container.
- A HLW vitrification plant to convert the blended waste slurry into a solid glass product in a sealed metal container.
- A steam and hot water plant consisting of five steam generating boilers and four hot water boilers. All nine boilers are fueled by diesel fuel.
- An emergency power plant consisting of six diesel generators.
- An emergency diesel fire water pump.

2.2.3. Amendment 1

PSD-02-01 Amendment 1 was issued on November 12, 2003. That permit consisted of reducing the number of LAW melters from three to two; an increase in the number of HLW melters from one to two; a change in the size and number of steam generating boilers from nine to six; a change in the size and number of emergency generators from six to three; and a change in the size and number of diesel fire water pumps from one to two.

2.2.4. Amendment 2

Amendment 2 was issued on October 2, 2005. It was an administrative amendment. There was no increase in emissions. The purpose of the amendment was to eliminate the restriction on hours of operation on the steam boilers and replace it with a restriction in the gallons of fuel burned. In addition, the mass emission limit for the three emergency generators was eliminated,

but the pounds-per-hour limit was retained unchanged. Additionally, several grammatical errors were corrected.

2.2.5. Amendment 3

Today's amendment proposes to eliminate the two Type II emergency diesel generators from the design and replace them with two turbine generators for emergency power production. The application also proposes an increase to the annual operating hour restriction for each of the two diesel engine-driven fire pumps from 110 hours per year to 230 hours per year in order to support maintenance and testing of WTP fire water systems. All other WTP emissions units, including the Type I emergency diesel generator, remain unchanged and continue under construction.

2.2.6. New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants

New Source Performance Standards (NSPS) apply to certain types of equipment that are newly constructed, modified, or reconstructed after a given applicability date. The National Emission Standards for Hazardous Air Pollutants (NESHAP) apply to categories of equipment with hazardous air pollutant emissions. The following NSPS and NESHAPs have applicability to this project. All but one of the following rules has already been evaluated. Because of the new turbines, applicability of 40 CFR 60 Subpart KKKK has not been discussed previously and is presented below:

- New Source Performance Standard 40 CFR 60, Subpart A
- New Source Performance Standard 40 CFR 60, Subpart Dc
- New Source Performance Standard 40 CFR 60, Subpart Kb
- New Source Performance Standard 40 CFR 60, Subpart CC
- New Source Performance Standard 40 CFR 60, Subpart PPP
- New Source Performance Standard 40 CFR 60, Subpart IIII
- **New Source Performance Standard 40 CFR 60, Subpart KKKK**
- National Emission Standards for Hazardous Air Pollutants 40 CFR 63, Subpart NNN
- National Emission Standards for Hazardous Air Pollutants 40 CFR 63, Subpart DDDDD
- **National Emission Standards for Hazardous Air Pollutants 40 CFR 63, Subpart YYYY**
- National Emission Standards for Hazardous Air Pollutants 40 CFR 63, Subpart ZZZZ

2.2.6.1. NSPS Subpart KKKK (Standards of Performance for Stationary Combustion Turbines)

40 CFR 60.4300 through 60.4220, otherwise known as Subpart KKKK, sets forth provisions for emission standards for stationary combustion turbines with heat inputs greater than 10 MMBtu/hr and commenced construction after February 18, 2005. Emergency combustion turbines are exempt from the nitrogen oxides (NO_X) provisions of the NSPS. The provisions of sulfur monitoring are applicable to this project.

2.2.6.2. NESHAP Subpart YYYY (National emission Standards of Hazardous Air Pollutants for Stationary Combustion Turbines)

40 CFR 63.6080 through 63.6175, otherwise known as Subpart YYYY, sets forth provisions for emission standards for stationary combustion turbines located at major sources of Hazardous Air Pollutants. Emergency combustion turbines are exempt from requirements of the NESHAP except for the notification requirements contained in 40 CFR 63.6145(d).

The other NSPS and NESHAP listed above are not affected by this proposed modification.

2.3. The PSD Application

The PSD application was officially received on May 27, 2012. The application was found to be complete on June 27, 2012.

2.4. PSD Applicability

This project is subject to PSD review for the emissions of NO_X.

- Hanford is an existing "major source" because existing emissions of NO_X, sulfur oxides (SO_X), and carbon monoxide (CO) are each greater than 250 tons per year (tpy).

- Hanford is an existing "major source" because it has a PSD permit, PSD X80-14 issued October 1, 1980, as well as PSD-02-01 issued on November 7, 2002.

- The PSD significance rate for NO_X is 40 tpy.

- Hanford's proposed WTP Amendment 3 will not be a "major modification" because emissions increases of NO_X will be below 40 tpy. However, this action will be treated as a permit amendment and the approval conditions will be updated as appropriate.

- The site of the proposed modification is in an area that has been designated as in attainment, with national and state ambient air quality standards for NO_X.

Therefore, the Hanford WTP permit will be amended in accordance with 40 C.F.R. 52.21 to address the new emission units.

2.5. Emissions and Emissions Control

All emissions increases above the emission rates that the PSD program refers to as "significant" must undergo PSD review. When evaluating emissions against the PSD significance levels, a new source's potential or allowable emissions are used. Potential emissions, or a source's Potential to Emit (PTE), are based on the theoretical operation 24 hours a day, 365 days per year (8,760 hours), or some other physical limitation of the equipment.

When evaluating a modification at an existing emission unit, a baseline actual to projected actual applicability test is performed. Baseline actual emissions mean the average rate, in tpy, at which the emission unit actually emitted the pollutant during any 24-month period within the last 10 years. Projected actual emissions means the maximum annual rate in tpy that a regulated pollutant is emitted in any 5-year period. If the units design capacity is increased, then the maximum annual rate in any 10-year period is used.

Sometimes a source may elect to utilize the potential minus actual calculation. If they do, it is not necessary to monitor and report as stringently as would be required under the baseline actual to projected actual test. These calculations are performed separately for each regulated pollutant. The combustion turbines are new units, therefore, a potential (in this case allowable) minus actual calculation must be used. For the increase in hours from the fire water pump, the potential (in this case allowable) minus actual emissions calculation will be used because 24 months of baseline emissions are not available.

2.5.1. Operational Limitations

Hanford has requested a federally enforceable limitation on the number of hours the combustion turbines can operate as well as an increase in the hours of operation of the fire water pump.

The new limits as well as the old limits are presented in Table 1 below:

Table 1. Federally Enforceable Limits		
Unit	**Old Limit (hr/yr)**	**New Limit (hr/yr)**
Fire Water Pump #1	110	230
Fire Water Pump #2	110	230
Type II Emergency Diesel Generator #1	164	---
Type II Emergency Diesel Generator #2	164	---
Emergency Combustion Turbine #1	---	164
Emergency Combustion Turbine #2	---	164

2.5.2. NO_X

Emissions of NO_X from the four impacted units are listed in the following tables.

Table 2 below presents emissions of NO_X from the fire water pumps:

Table 2. Fire Water Pump Emissions		
Unit	**Old Emissions (tpy)**	**New Emissions (tpy)**
Fire Water Pump #1	0.18	0.39
Fire Water Pump #2	0.18	0.39
TOTAL	0.37	0.77

Because the fire water pumps have not been operating for 48 months, it is impossible to present baseline actual emissions. Therefore, in accordance with 40 CFR 52.21(b)(48)(ii)(d), today's proposed increase is calculated as allowable minus zero. The allowable emissions of NO_X from two diesel fire water pumps running for 230 hours per year, is estimated to be 0.77 tpy. This estimate was based upon emission factors presented by Hanford and accepted by Ecology in the original permit.

Table 3 presents the emissions of NO_X from the Type II diesel generators and combustion turbines:

Table 3. Combustion Turbine Emissions		
Unit	**Existing Permit (tpy)**	**Proposed Permit (tpy)**
Type II Emergency Diesel Generator #1	7.48	---
Type II Emergency Diesel Generator #2	7.48	---
Emergency Combustion Turbine #1	---	5.72
Emergency Combustion Turbine #2	---	5.72
TOTAL	**14.96**	**11.45**

Table 4 presents the total NO_X emissions increase from this modification and compared them to the PSD Significant Emission Rate (SER).

Table 4. NO_X Emissions Compared to the SER				
Emergency Combustion Turbines (tpy)	**Fire Water Pump (tpy)**	**Total (tpy)**	**PSD SER (tpy)**	**Emissions Above PSD SER (Yes or No)**
11.45	0.77	12.22	40	No

2.5.3. All Other Criteria Pollutants

Table 5 presents the emissions of other regulated pollutants from the project.

Table 5. Criteria Pollutant Emissions Compared to the SER					
Pollutant	**CO (tpy)**	**SO_2 (tpy)**	**PM (tpy)**	**VOC (tpy)**	**Pb (tpy)**
Combustion Turbine	6.33	0.04	0.1	1.80	1.21×10^{-4}
Fire Water Pump	0.03	0.0006	0.01	0.01	---
Total	6.36	0.0406	0.11	1.81	1.21×10^{-4}
PSD SER	100	40	25	40	0.6
Emissions Above SER Yes or No	No	No	No	No	No

2.5.4. Greenhouse Gas Emissions Analysis

40 CFR 52.21(b)(40(v) defines the regulatory framework for greenhouse gases (GHGs) at existing stationary sources. Since Hanford is an existing source with PTE of CO_2e greater than 100,000 tpy, a GHG analysis is required. In March 2011 EPA published guidance on evaluating GHG emissions "PSD and Title V Permitting Guidance for Greenhouse Gases."[1] The PSD permitting guidance presents a two-part applicability process that evaluates both:

- The net emissions increase of CO_2e, calculated as the sum of the six GHG pollutants on a CO_2e basis in order to determine whether the sources emissions are in excess of 75,000 TPY; and, if so,
- The net emissions of GHGs (on a mass basis) exceed zero tpy.

The first step is to determine if the mass GHG emissions are greater than zero. In Step 1, the GHG emissions attributable to the project (CO_2e) are summed and compared to the SER of 75,000 tons of CO_2e. The second step is to determine if the mass GHG emissions are greater than zero. If both the net emissions increase and net mass emissions increase are greater than 75,000, the project is subject to PSD review for GHGs.

There are four emission units that are modified as a result of this project. They are:

- Two emergency generating combustion turbines
- Two fire water pumps

The combustion turbines are new units and the calculation is allowable minus zero. The fire water pumps are being modified by relaxing an hours of operation limitation. Because they did not generate 24 months of data to be used to determine baseline actual emissions, actual emissions will be set to zero.

Table 6 presents the CO_2e multipliers:

Table 6. CO_2e Multipliers

Pollutant	CO_2e Multipliers
Carbon dioxide	1
Methane	21
Nitrous oxide	310
Hydrofluorocarbons	650
Perfluorocarbons	6,500
Sulfur hexafluoride	23,900

[1] http://www.epa.gov/nsr/ghgdocs/ghgpermittingguidance.pdf

The only pollutant Hanford could find emission factors for was carbon dioxide. Table 7 presents the emissions increase of greenhouse gas equivalents:

Table 7. GHG Equivalents

	Carbon Dioxide	Methane	Nitrous Oxide	Hydrofluoro-carbons	Perfluoro-carbons	Sulfur Hexafluoride	Total
Fire Water Pump #1	39.7	0	0	0	0	0	39.7
Fire Water Pump #2	39.7	0	0	0	0	0	39.7
Emergency Combustion Turbine #1	676	0	0	0	0	0	676
Emergency Combustion Turbine #2	676	0	0	0	0	0	676
Total	1431	0	0	0	0	0	1431

Because the emissions increase of CO_2e is less than 75,000, there is no need to perform a mass-based calculation, and the project is not subject to greenhouse gas regulation under the PSD rules.

3. DETERMINATION OF BEST AVAILABLE CONTROL TECHNOLOGY

3.1. Definition

Best Available Control Technology (BACT), is defined as an emission limitation based on the most stringent level of emission control that has been applied at an identical, or similar, source that is technically and economically feasible.

In a BACT analysis, the applicant must rank all control options from highest level of control to the lowest. If the applicant can show that the highest level of control is technically or economically infeasible for the source in question, then the next most stringent level of control is evaluated. Ultimately, the burden is on the applicant to prove why the most stringent level of control should not be used.

3.2. Regulatory Requirements

Federal law requires an applicant to use BACT for any pollutant that will have a significant emission increase at any PSD source. An applicant is required by Washington State regulations to use BACT for any pollutant that will have increased emissions, if the emission unit was physically modified.

If a project is proposed in an area that exceeds ambient air quality standards for a pollutant, the proposed source must use a control technology that will result in the lowest achievable emission rate (LAER) for that pollutant. Additionally, the applicant would be required to reduce emissions from other sources in the area at least as much as the proposed source will increase emissions. This project is not required to install LAER.

3.3. BACT for the Project

A summary of the existing NO_X BACT analysis is shown in Table 8:

Table 8. NO_X BACT Determination in PSD-02-01

Emission Unit	BACT	Emission Limit
Pretreatment Facilities	Proper operation and a caustic scrubber	0.22 tpy
LAW Vitrification Facility	Selective Catalytic Reduction	54.0 ppmdv, 7.5 tpy
HLW Vitrification Facility	Selective Catalytic Reduction	10.0 ppm, 1.3 tpy
Steam Plant and Hot Water Boiler Plant	• Good Combustion Practices • Low NO_X burners • Ultra-low sulfur diesel • Fuel limit of 13,400,000 gallons per year	Hot water boilers 140 ppmdv, 11.0 tpy
		Steam boilers 14 ppmdv, 27.4 tpy
Emergency Generators	• Good Combustion Practices • Ultra-low sulfur diesel • Limited hours of operation	1,253 ppmdv, 0.6 tpy
Diesel Fire Water Pump	• Good Combustion Practices • Ultra-low sulfur diesel • Limited hours of operation	0.24 tpy

3.3.1. NO_X BACT for Turbine Generators

There are several emission controls to consider for reducing turbine NO_X emissions. These include:

- Operational controls practices
- Wet controls using water injection to reduce combustion temperatures for NO_X control
- Dry controls using advanced combustor design to suppress NO_X formation
- Post-combustion catalytic control to selectively reduce NO_X
- Other catalytic systems

Each turbine will produce only 5.72 tons of NO_X per year. Hanford proposed, and Ecology agrees, that BACT for controlling NO_X emissions from the turbine generators is:

- Good combustion practices
- Operational limit of 164 hours per year

Additionally, particulate from the turbine generators is expected to be 0.1 tpy. One additional change to the permit will be to require Hanford to use ultra-low sulfur fuel (0.0015 percent by weight) which is the current on-road standard.

4. AMBIENT AIR QUALITY IMPACTS ANALYSIS

The PSD permitting program requires that an ambient Air Quality Impacts Analysis (AQIA) be performed for pollutants emitted in significant quantities. No ambient AQIA is required under this modification because emissions did not exceed a SER. However, because three new National Ambient Air Quality Standards (NAAQS) were promulgated by EPA since the permit was originally issued, Hanford agreed to perform that analysis.

Typically, an AQIA will include three parts: significant impact analysis, NAAQS analysis, and PSD increment analysis. The first step in the AQIA is to determine if emissions from the proposed project result in impacts greater than the Modeling Significant Impact Level (MSIL). Then, for those pollutants and averaging periods that have impacts greater than the MSIL, a NAAQS analysis is used to determine if the proposed project will cause or contribute to an exceedance of a NAAQS. The PSD increment analysis is used to determine if the change in the air quality since the applicable baseline dates is greater than the Class I and Class II PSD increment levels.

This section will discuss the ambient AQIA of the nearby Class II Area. The AQIA for the Class I areas will be discussed along with the Air Quality Related Values (AQRVs) in Section 5.

4.1. Modeling Methodology

The dispersion modeling analysis used BEE-Line Software's BEEST version 9.93 to assess WTP impacts to the new NAAQS. The BEEST program is a Windows-based user interface to the EPA-approved AERMOD air dispersion model. BEEST version 9.93 includes AERMOD version 11353, AERMET version 11059, AERMAP version 11103, and BPIP-Prime version 04274.

AERMOD utilizes individual emission point release characteristics, source emission rates, surface and upper air meteorological data, terrain data, and receptor data to determine maximum annual, 24-hr, and 1-hr concentrations affecting off-site receptors.

4.2. Impacts Assessment

No impacts assessment was performed because this modification did not have an emissions increase in excess of the PSD SER for NO_X.

4.3. NAAQS Analysis

This analysis describes the ambient air analysis performed to assess the WTP's impacts to EPA's new NAAQS for nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and particulate matter 2.5 microns or less ($PM_{2.5}$).

This AQIA supplements the previous analysis that was performed in 2003 supporting Ecology's approval of PSD-02-01 Amendment 1. The previous analysis assessed the WTP's impact of the NAAQS for NO_2 (annual) and PM_{10} 24-hr and annual. Results of that analysis showed the WTP had an insignificant impact on the NAAQS. As shown below, this project does not result in an exceedance of any NAAQS.

4.3.1. Annual $PM_{2.5}$ NAAQS Analysis

Table 9 presents the modeled annual $PM_{2.5}$ concentration and compares it to the NAAQS.

Table 9. Annual $PM_{2.5}$ NAAQS Analysis

AERMOD Results ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Ambient Impact ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Exceed NAAQS (Yes or No)
0.010	5.9	5.91	15	No

4.3.2. 24-Hour $PM_{2.5}$ NAAQS Analysis

Table 10 presents the modeled 24-hour $PM_{2.5}$ concentration and compares it to the NAAQS.

Table 10. 24-Hour $PM_{2.5}$ NAAQS Analysis

AERMOD Results ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Ambient Impact ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Exceed NAAQS (Yes or No)
0.445	15	15.445	35	No

4.3.3. One-Hour NO_2 NAAQS Analysis

Table 11 presents the modeled 1-hour NO_2 concentration and compares it to the NAAQS.

Table 11. One-Hour NO_2 NAAQS Analysis				
AERMOD Results (µg/m^3)	**Background Concentration (µg/m^3)**	**Total Ambient Impact (µg/m^3)**	**NAAQS (µg/m^3)**	**Exceed NAAQS (Yes or No)**
55.46	12.2	67.66	188	No

4.3.4. One-Hour SO_2 NAAQS Analysis

Table 12 presents the modeled 1-hour SO_2 concentration and compares it to the NAAQS.

Table 12. One-Hour SO_2 NAAQS Analysis				
AERMOD Results (µg/m^3)	**Background Concentration (µg/m^3)**	**Total Ambient Impact (µg/m^3)**	**NAAQS (µg/m^3)**	**Exceed NAAQS (Yes or No)**
1.22	No data available	1.22	196	No

4.4. Increment Consumption

There was no need to show increment consumption because the project did not result in an increase of any pollutant in excess of the significant impact rates.

4.5. Toxic Air Pollutants

PSD rules require the applicant to consider emissions of toxic air pollutants (TAPs) during the course of BACT analysis. One reason for this requirement is to ensure that the source does not employ an emission control technique that controls the main pollutant of concern, but emits a new TAP in serious quantities. Ecology's regulations (Chapter 173-460 WAC) require an ambient AQIA of TAP emissions.

All new source review requirements pursuant to WAC 173-400-110 are addressed by Ecology's Nuclear Waste Program under Notice of Construction approval review. This review also fulfills the PSD review requirement. Consequently, Ecology concludes no further consideration of TAPs impacts is required under this PSD permit.

5. AIR QUALITY RELATED VALUES

The PSD regulations require an evaluation of the effects of the anticipated emissions from the proposed source on visibility, soils, and vegetation in Class I areas.

Screening to evaluate the project's impact to the nearest Class I areas was performed in accordance with the Federal Land Managers' Air Quality Related Values Workgroup (FLAG) Phase I Report - Revised 2010. The FLAG document recommends that initial screening based on a source's potential emissions in tpy (Q) divided by the distance to the nearest class I area (D) can be performed on sources greater than 50 kilometers from a Class I area. If the Q/D value is less than 10, a source is considered to have an insignificant impact to the nearest Class I area and no further impact review is required. The screening procedure is described on Page 18 and 19 of the FLAG document.

The emission rate values identified in Table 13 were taken from Table 5-2 of the PSD Application Supplement being reviewed. Note that per the FLAG guidance, the emergency turbines, type I emergency generator, and fire pump emissions were converted to an annualized rate based on 8,760 hr/yr as required for screening purposes. Their maximum projected emission rates are much lower than the screening values due to limited hours of operation.

Table 13. Class I Area Visibility Analysis

Pollutant	Boilers (tpy)	Type I Generator (tpy)	Turbine Generators (tpy)	Fire Pumps (tpy)	PT Facility (tpy)	LAW Vit (tpy)	HLW Vit (tpy)	WTP Total Q Value (tpy)	Distance to Nearest Class I Area D Value (km)	Q/D Value
NO_X	84.3	286.1	611.4	29.5	0.4	36.7	8.5	1057.0	137.0	7.7
SO_2	2.9	0.4	2.1	0.0	0.0	3.7	4.8	14.0	137.0	0.1
PM_{10}	18.7	9.5	5.5	0.4	2.0	1.6	1.2	38.9	137.0	0.3
								1110.0	137.0	**8.1**

The nearest Class I area is the Alpine Lakes Wilderness Area, which is 137 kilometers from the WTP project. Results of the screening show that the Q value equals 1110 tpy. The result of the Q/D calculation is a value of 8.1. This value is less than the screening threshold of 10. Sulfuric acid mist was not included in the screening because emission factors were not available in AP-42 or by the manufacturer for the diesel combustion units and Process Facility emission units assumed that all sulfur was converted to SO_2.

5.1. Other Air Quality Related Issues

No Class 1 deposition analysis was performed because emissions from this modification were below the PSD SER.

5.2. Construction and Growth Impacts

The proposed project at the Waste Treatment Plant may cause a temporary increase in emissions related to the actual construction project. The internal combustion engines on the construction vehicles and equipment may emit small amounts of PM, CO, SO_2, NO_X, and VOC. Fugitive PM emissions may also result from demolition, construction-related traffic, and other construction-related activities. The United States Department of Energy will minimize fugitive PM emissions that extend beyond plant boundaries through appropriate fugitive dust control techniques.

The proposed project is not expected to lead to a permanent significant increase in the number of employees at the Hanford Facility. Therefore, no increase in emissions from residential growth or in commuting-related mobile source emissions will be directly related to the proposed projects. Also, the proposed projects are not expected to lead to industrial growth in the area that would subsequently cause an increase in emissions of air contaminants.
Therefore, the proposed project is not expected to cause adverse construction and growth-related impacts.

5.3. Impacts on Soils and Vegetation

The analysis of air pollution impact on soils and vegetation are based in part on an inventory of the soils and vegetation types found in the impact area. This inventory includes all vegetation of any commercial or recreational significance. The land surrounding the facility is under the control of the United States Department of Energy. No sensitive aspects of the soil and vegetation in this area have been identified. The immediate area surrounding the facility is presently in attainment or unclassifiable for all regulated pollutants. The ambient AQIA, conducted as part of this permit action, demonstrates that the facility does not cause or contribute to any violation of the NAAQS. As such, this project should produce negligible impacts on soils and vegetation.

6. CONCLUSION

The project will have no significant adverse impact on air quality. The Washington State Department of Ecology finds that the applicant, United States Department of Energy (Hanford), has satisfied all requirements for PSD.

For additional information, please contact:

Richard B. Hibbard P.E.
Washington State Department of Ecology
Air Quality Program
P.O. Box 47600
Olympia, WA 98504-7600
(360) 407-6896
richard.hibbard@ecy.wa.gov

7. LIST OF ACRONYMS AND ABBREVIATIONS

AERMOD	American Meteorological Society/EPA Regulatory Model
AQIA	Air Quality Impacts Analysis
AQRVs	Air Quality Related Values
ASIL	Acceptable Source Impact Level
BACT	Best Available Control Technology
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO_2e	Carbon dioxide equivalents
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
FLAG	Federal Land Managers' Air Quality Related Values Workgroup
GHGs	Greenhouse Gases
Hanford	United States Department of Energy's Hanford Site
HLW	High-Level Waste
hr	Hour(s)
LAER	Lowest Achievable Emission Rate
LAW	Low-Activity Waste
$\mu g/m^3$	Micrograms per Cubic Meter
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	Nitrogen Dioxide
NO_X	Nitrogen Oxides
NSPS	New Source Performance Standards
$PM_{2.5}$	Particulate Matter 2.5 Microns or Less
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
SER	Significant Emission Rate
SO_2	Sulfur Dioxide
SO_X	Sulfur Oxides
TAPs	Toxic Air Pollutants
tpy	Tons per Year
WAC	Washington Administrative Code
WTP	Waste Treatment Plant
Yr	Year